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Notulae Crassulacearum Asiae Orientalis (1)

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アジア産ベンケイソウ科植物の分類覚書 (1)

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1) *Sedum* section Sinosedum was regarded as a synonym of *Sinocrassula*. 2) The Chinese *Hylotelephium sieboldii* was treated as a local variety with differences of inflorescences and flowers. 3) Two new combinations of *Orostachys malacophyllus* (Pallas) Fischer were proposed.

During preparation of a revision of the Asiatic species of *Sedum* and its allied genera I have noticed several noteworthy taxa as well as novelties. In this series of notes I want to publish these. The abbreviation of herbaria follows Index Herbariorum, Part 1: the Herbaria of the World, 8th edition, edited by P. K. Holmgren et al. (New York Botanical Garden, 1990).

1) The identity of *Sedum paoshingense* Fu, the type species of *Sedum* sect. Sinosedum Fu

Sedum paoshingense was described by Fu (1965) based on the collection from Baoxing (Paoshing), Sichuan (Szechuan), S W China with several extraordinary characters. By these characters Fu established a monotypic section Sinosedum. The section is characterized by having these such as extremely thick leaves, compact corymbose inflorescences similar to those of *Hyolotelephium*, and erect free carpels. Later Fu (1984) added having 5 stamens to the characteristics.

As far as the description the species is quite unique and greatly diversified from other species of *Sedum*. When I published a revisional system of the subfamily Sedoideae (Ohba 1978), I suspended taxonomic evaluation of the species.

In 1987 I had an opportunity to examine the authentic specimen at Beijing (PE). Though I did not find the type and the cotype specimens, I could examine a single specimen which well agrees with the description (Fig. 1). Then I have borrowed the specimen from Beijing and observed floral features.

The plant can be described as follows: Leaves are oblanceolate, flat, extremely thick, apex acuminate with a prominent short point around 1 mm long, sessile and spurless.

Flowers (Fig. 2) always haplostemonous. Calyx thick, basally ca. 1 mm connate, lobes triangular to subulate, 2.8–3.5 mm long, 0.8–1.2 mm wide, apex obtuse or round, suberect. Petals free,

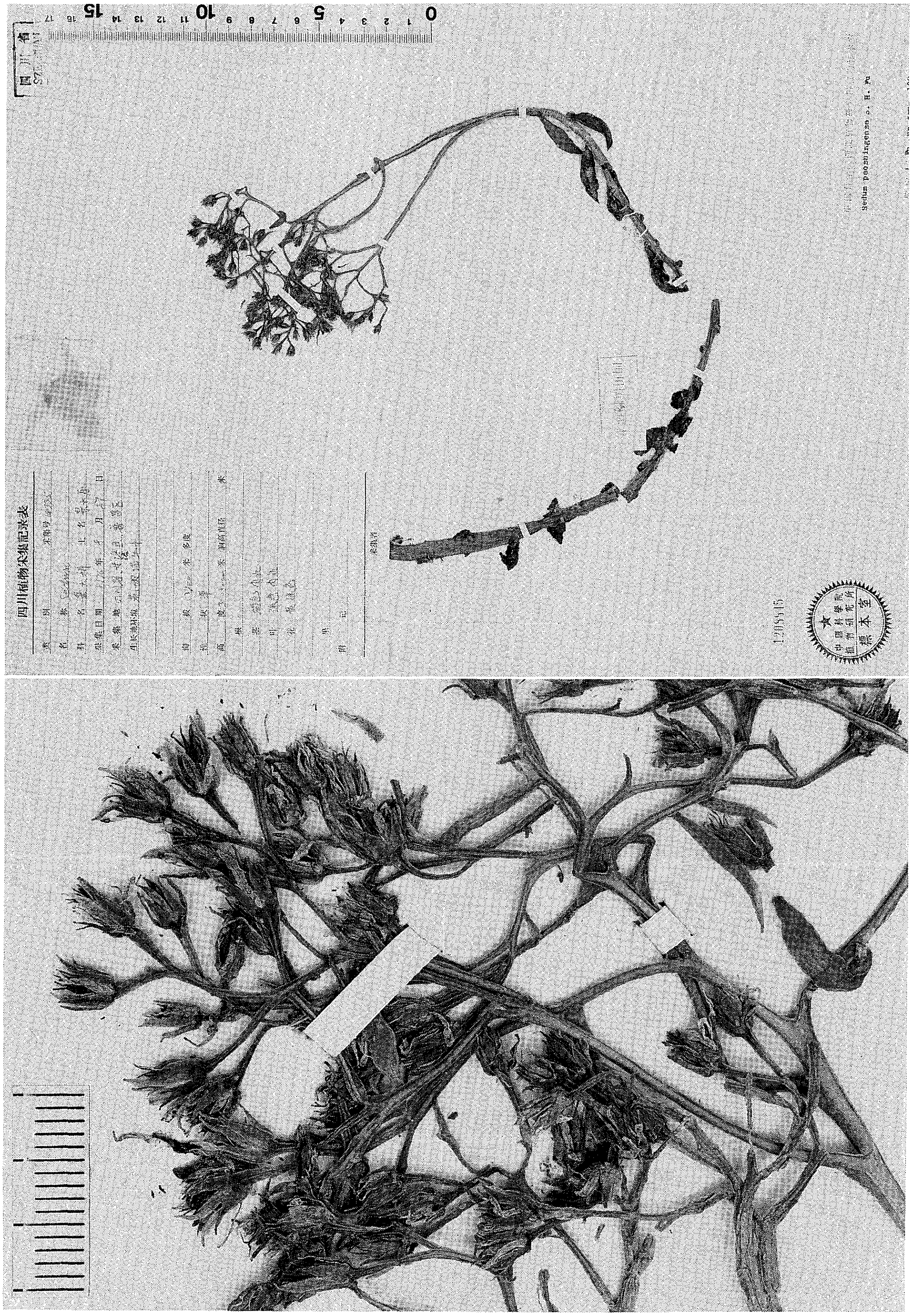


Fig. 1. *Sedum paoshingense* Fu (PE).

subulate or linear-lanceolate, apex obtuse, 5–6 mm long, 1.1–1.3 mm wide, suberect at flowering. Stamens 5, alternipetalous, always shorter than petal. 4.5–5 mm long; filaments linear, erect; anthers oblong-ovate with round apex, ca. 0.7 mm long, deep red before dehiscence. Nectar-scales rectangular-ovate, 5–6 mm long, ca. 0.6 mm wide. Ovaries free from base, erect, 4.8–5.5 mm long, tapering toward apex, stigmatic portion located at apex of ovaries, ±swollen; ovules 14–18 in each locule. Seeds elliptic, 0.7–0.9 mm long, testa striate.

One of the noticeable external features is the leaves with a prominent point at the apex, though Fu described the apex as acuminate. Besides the leaves, the spread inflorescences with conspicuous subulate bracts and the haplostemonous flowers with subulate or linear-lanceolate petals agree with those of the species of *Sinocrassula,* particularly *S. indica.*

The specimen examined agrees Fu's description and represents the species concerned. Though it remains some doubt because I could not examine the type, the section Sinosedum is regarded as a synonym of *Sinocrassula.* And *Sedum paoshingense* is treated reasonably as a synonym of *Sinocrassula indica* ranging for west Himalaya to C China and showing extremely wide range of variation particularly in the vegetative features.

Sinocrassula. A. Berger in Engler et Prantl, Nat. Pfl.-fam. 2 Aufl. **18a:** 463 (1930), pro syn. excl. *S. aliciae.* Lectotype: *Sinocrassula indica* (Decne.) Berger (Ohba 1978).

Sedum sect. Sinosedum Fu in Acta Phytotax. Sin. Add. **1:** 115 (1965), syn. nov. Type: *Sedum paoshingense* Fu.

Sinocrassula indica (Decne) A. Berger, op. cit.

Sedum paoshinense Fu in Acta Phytotax. Sin. Add. **1:** 114 (1965), syn. nov.

Specimen examined. SW China. Sichuan. Garlung Xian, Puchang, alt. 700 m (Unknown collector 14335, PE).

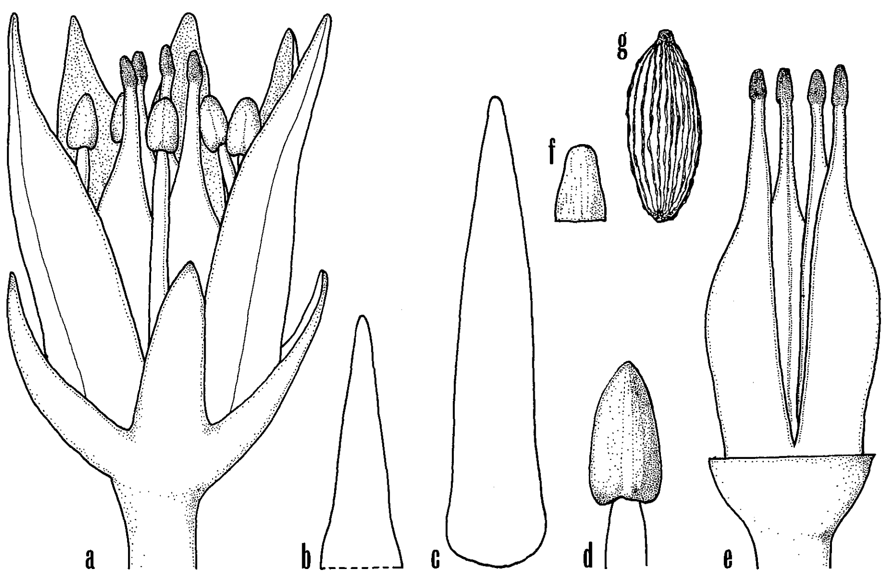


Fig. 2. Flowers of *Sedum paoshingense* Fu. a: flower. b: calyx-lobe. c: petal. d: anther. e: ovaries. f: nectar-scale. g: seed. ×10, except d, g ×20.

2) On the record of *Hylotelephium sieboldii* from China

One of the famous temperate Crassulaceae as ornamental plants, *Hylotelephium sieboldii* (Sweet ex Hook.) H. Ohba, which has been known more commonly as *Sedum siboldii,* was described from an introduced plant to Royal Botanic Gardens, Kew, from Japan by Messrs. Henderson (Hooker 1863).

Fu (1984) reported the species to occur in China. This is the first record of the native locality outside of Japan.

Recently I have examined the voucher specimens deposited in PE. The specimens (Fig. 3) are completely glabrous and nearly smooth, having creeping stems with branches of which the bases are more or less bent. It is difficult whether the terminal branch is a part of the main flowering stem or one of the lateral branches, and also whether all these lateral branches have arisen simultaneously within the same year or not.

The leaves and flowers can be described as follows: Leaves ternate, broadly obovate or very broadly ovate, 1.7–2 cm long, 1.4–2 cm wide, round at apex, broadly cunate at base, and entire along margins. Inflorescences terminal and also arising from axils of the uppermost ternate leaves, with 30–40, semiglobose flowers.

Flowers 5-merous. Calyx is basally connate; lobes narrowly ovate or oblong-ovate with round apex, 1–1.3 mm long, and suberect at flowering. Petals broadly lanceolate or linear lanceolate with round apex, 5–6 mm long, 1.6–1.8 mm wide, margin entire. Stamens a little shorter than petal-length, anthers broad-elliptic. Nectar-scales oblong, ca. 0.5 mm long, ca. 0.3 mm wide. Gynoecium attenuate; ovaries (including style) 5.5–6 mm long, tapering to styles attaining 1.5–2 mm long, ovules about 26 in each locule.

Before Fu reported *H. sieboldii* from China, this species has been known from a) cultivation plants, b) Shodoshima island, Kagawa Prefecture in the Setonaikai Sea, and c) some localities in Toyama Prefecture, the Japan Sea side of Honshu.

The cultivated plants agree with the illustration accompanied the original description (Curtis's Bot. Mag. **89:** t. 5358), and show a strong uniformity at least throughout Japan.

This from Shodoshima shows also the uniformity and is hardly different from the cultivated plants, though Yuasa (1969) wrote the considerable variability, and the slight difference from the cultivated plants. Yuasa also wrote the island is one of the native locality. Not only Yuasa several taxonomists assumed that the species spreaded out into cultivation from Shodoshima (Ohwi 1965a, 1965b, Tomida 1973).

As regard the plant from Toyama Prefecture I have treated as the local variety (Ohba 1981) or once a different species, *Hylotelephium ettyuense* (Tomida) H. Ohba (Ohba 1977). As pointed out by Tomida (1973) var. *ettyuense* has a tendency to have subsidiary inflorescences from the axils of the upper leaves. The shape of the inflorescence and leaves is different from that of var. *sieboldii* found in cultivation and Shodoshima.

The specimens collected from China more approach to var. *ettyuense* than var. *sieboldii* in having small semi-globose inflorescences and entire leaves. However, the Chinese plant differs from both variaties in flowers; i.e., the petals large, not well constricted versus small and constricted in var. *sieboldii* and *ettyuense,* ovaries attenuate versus stipitate and nectar-scales oblong versus linear of them. The Chinese plant is reasonable to be regarded as a local variety and named var. *chinense.*

Var. *chinense* was collected in Lichuan Xian, Moudao near Shuanghe, which is located near a river joins the Modaoqi River, the type tree of *Metasequoia glyptostroboides* H.H. Hu et Cheng

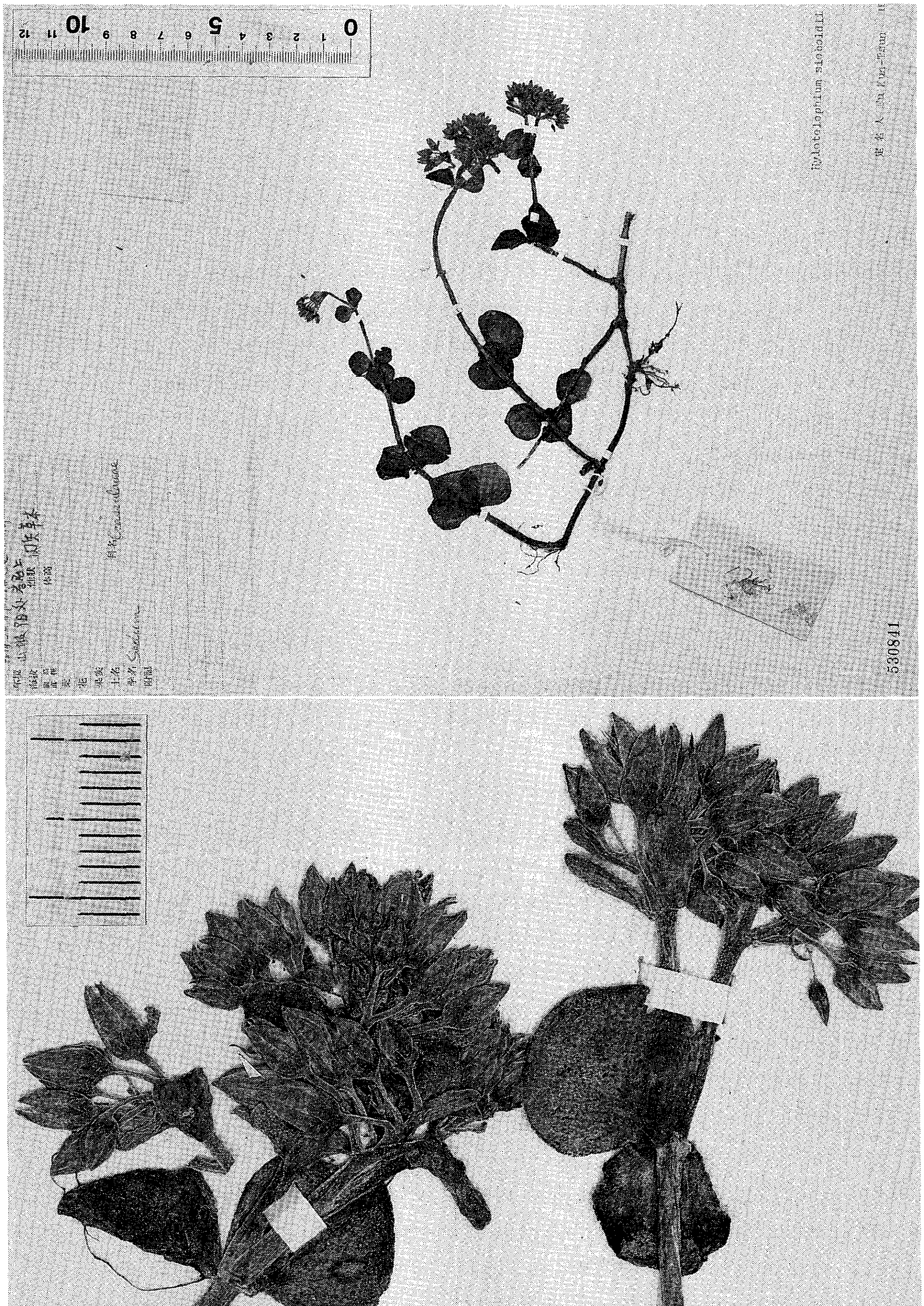


Fig. 3. *Hylotelephium sieboldii* var. *chinense* (type).

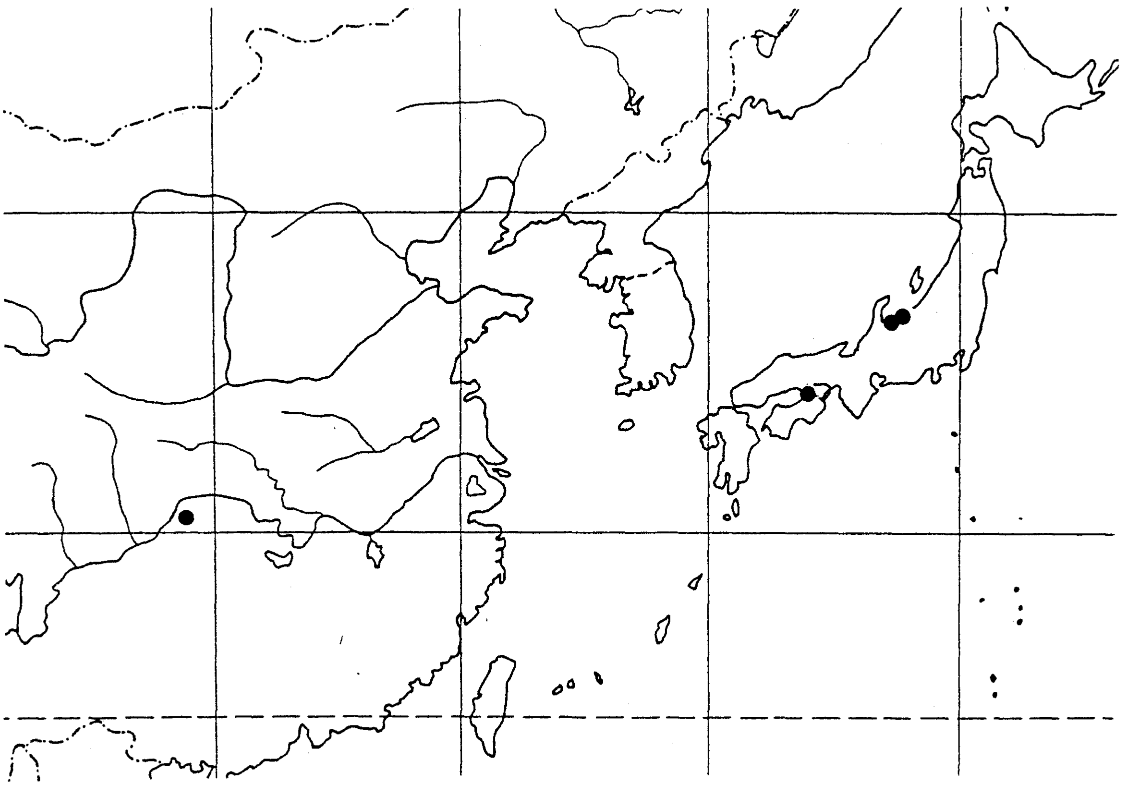


Fig. 4. Distribution of *Hylotelephium sieboldii*. Var. *chinense* (China, Hubei); var. *ettyuense* (Japan, Toyama Prefecture; the Japan Sea side); var. *sieboldii* (Japan, Shodoshima; the Setonaikai Sea).

was found in Modaoqi, a village near the river (Fig. 4).

Hylotelephium sieboldii (Sweet ex Hook.) H. Ohba in Bot. Mag. Tokyo **90:** 52 (1977); in J. Fac. Sci. Univ. Tokyo, Sect. III, **12:** 165 (1978).

var. **sieboldii.**

Specimens examined. Japan. Shikoku. Kagawa Pref., Shodoshima, Kankakei (A. Ishigami on 29 Oct. 1943, TI; K. Nakahara on 14 Nov. 1953, TI; M. Togashi on 19 Nov. 1968, TI; H. Ohashi, H. Ohba & J. Murata 75101 on 10 Nov. 1975, TI). From origin unknown cultivated plants (Y. Ogura on 23 Oct. 1914, TI; K. Mori on 6 Nov. 1976, TI).

var. **ettyuense** (Tomida) H. Ohba in J. Jpn. Bot. **56:** 186 (1981).

Sedum ettyuense Tomida in J. Jpn. Bot. **48:** 140 (1973).

Hylotelephium ettyuense (Tomida) H. Ohba in Bot. Mag. Tokyo **90:** 50 (1977).

Specimens examined. Japan. Honshu. Toyama Pref. Zyoganjigawa (cult. at Bot. Gard. Univ. Tokyo) (K. Enomoto in Oct. 1972, TI); Kumano-gawa water area, a branch stream of Jintsugawa River (cult. at Bot. Gard. Univ. Tokyo) (K. Enomoto on 10 Oct. 1973, TI).

var. **chinense** H. Ohba, var. nov.

H. sieboldii sensu Fu in Fl. Reip. Pop. Sin. **34**(1): 52 (1984).

Var. *ettyuense* (Tomida) H. Ohba nullo dubio proxima sed a qua foliis semper trifoliatis integris et inflorescentiis pauci-florum diversa; a typica varietate foliis latissime ovatis vel ovato-rhombicis non latissime obovatis nec late obtriangulalibus toto integris nec praemorsis et inflorescentiis

semiglobosis nec globosis bene differt.

Type: China. Hubei Prov., Lichuen Xian, Moudao near Shuanghe, on rocks. K.-H. Fu & Z.-S. Zhang 1742 on 26 Sept. 1957 (PE).

3) **A new combination of *Orostachys***

As noted in a previous paper, *Orostachys aggregeatus* (Makino) Hara is reasonably regarded as a local variety of *O. malacophyllus* (Pallas) Fischer distributed in Hokkaido and northern Honshu (Ohba and Tagawa 1990).

Otherwise, *Orostachys iwarenge* (Makino) Hara, as also considered to a littoral variety of *O. malacophyllus,* which might be distributed in the pacific side of Honshu, Shikoku and Kyushu with some extention to the Japan Sea side.

Orostachys malacophyllus (Pallas) Fischer.

var. **aggregeatus** (Makino) H. Ohba [Ohba and Tagawa in J. Jpn. Bot. **65:** 307 (1990), comb. nud.], comb. et stat. nov.

Cotyledon aggregeata Makino in Bot. Mag. Tokyo **24:** 72 (1910).

var. **iwarenge** (Makino) H. Ohba [Ohba and Tagawa, loc. cit., comb. nud.], comb. et stat. nov.

Cotyledon iwarenge Makino in Bot. Mag. Tokyo **16:** 142 (1902).

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要 旨

アジアのベンケイソウ科植物の種族誌のうち，既に発表したイワベンケイ属とトキワイワレンゲ属を除く諸属について目下取りまとめ中である．その過程で問題となった種についての覚書を断続的に発表することにした．1) *Sedum paoshingense* がマンネングサ属ではなくテンジクイワレンゲ属の種であることを明らかにした．2) 中国で見いだされたミセバヤは変種として区別するのがよい．3) アオノイワレンゲとイワレンゲの新学名を提唱した．